Listing of Claims:

1. (Amended) A transconductor circuit, comprising:

a first input device M_1 and a second input device M_2 each having a control terminal coupled to a differential radio frequency input signal; and

a bias setting device M_B having a control terminal coupled to said differential radio frequency input signal and an output coupled to said control terminal of each of said M_1 and M_2, where M_B is partitioned into two equal sized paralleled bias setting devices M_{B1} and M_{B2}, where M_{B1} and M_{B2} are coupled to said control terminals of M_1 and M_2 for establishing a bias voltage at the control terminals of M_1 and M_2 and wherein said differential radio frequency input signal is coupled to a base of M_{B1} and a base of M_{B2}.

2. (Original) A transconductor circuit as in claim 1, where M_1, M_2, M_{B1} and M_{B2} are CMOS field effect transistors (FETS) and where said control terminal of each is a gate, where M_1 and M_2 are connected in a common source configuration, where a drain of M_{B1} is coupled to said gate of M_1 through a first resistance and to said gate of M_2 through a second resistance, and where a drain of M_{B2} is coupled to said gate of M_1 through said first resistance and to said gate of M_2 through said second resistance.

3. (Original) A transconductor circuit as in claim 2, where said gate of M_{B1} and said gate of M_{B2} are each capacitively coupled to said RF input signal.

4. (Original) A transconductor circuit as in claim 2, where said drain of each of M_{B1} and M_{B2} is coupled to a source of bias current I_B.

5. (Original) A transconductor circuit as in claim 1, where M_1, M_2, M_{B1} and M_{B2} are bipolar transistors Q_1, Q_2, Q_{B1} and Q_{B2} and where said control terminal of each is a base, where Q_1 and Q_2 are connected in a common emitter configuration, where a collector of each of Q_{B1} and Q_{B2} is coupled to a source of bias current I_B and to a base of a further bias transistor Q_{Bb} having an emitter coupled to said base of Q1 through a first resistance and to said base of Q_2 through a second resistance.

6. (Original) A transconductor circuit as in claim 5, where said base of Q_{B1} is coupled to

said first resistance and to said base of Q_1, and where said base of Q_{B2} is coupled to said second resistance and to said base of Q_2.

7. (Original) A transconductor circuit as in claim 6, where said bases of Q_1, Q_2, Q_{B1} and Q_{B2} are each capacitively coupled to said RF input signal.

8. (Original) A transconductor circuit as in claim 5, where a collector of Q_{Bb} is coupled to a supply voltage V_{DD}.

9. (Original) A transconductor circuit as in claim 5, where emitters of Q_1, Q_2, Q_{B1} and Q_{B2} are each degenerated using a degeneration impedance.

10. (Original) A transconductor circuit as in claim 5, where a value of the degeneration impedance of each of Q_{B1} and Q_{B2} is about twice the value of a degeneration impedance that would be used if only a single degenerated bias transistor Q_B were used in place of Q_{B1} and Q_{B2}.

11. (Original) A transconductor circuit as in claim 1, forming a part of a mixer of a cellular telephone.

12. (Original) A transconductor circuit as in claim 1, disposed in a radio frequency integrated circuit.

13. (Original) A transconductor circuit as in claim 1, disposed in a radio frequency integrated circuit of a direct conversion receiver of a cellular telephone.

14. (Amended) A transconductor circuit as in claim 1, disposed in a radio frequency integrated circuit as part of a down-conversion mixer of a direct conversion receiver of a cellular telephone~~, and where said radio frequency input signal is a differential signal~~.

15. (Amended) A method to substantially cancel second-order intermodulation distortion and enhance a second order intercept point in a transconductance circuit, comprising:

constructing the circuit to comprise a first input device M_1, a second input device M_2 and

a bias setting device M_B each having a control terminal coupled to a differential radio frequency input signal, where an output of M_B is coupled to said control terminal of each of said M_1 and M_2; and

partitioning M_B into two equal sized paralleled bias setting devices M_{B1} and M_{B2}, where M_{B1} and M_{B2} are coupled to said control terminals of M_1 and M_2 for establishing a bias voltage at the control terminals of M_1 and M_2 and wherein said differential radio frequency input signal is coupled to a base of M_{B1} and a base of M_{B2}..

16. (Original) A method as in claim 15, further comprising coupling M_1, M_2 and M_B to a supply voltage, and operating the circuit with ~~a~~ said supply voltage of about one volt.

17. (Amended) A method as in claim 15, where M_1, M_2, M_{B1} and M_{B2} are CMOS field effect transistors (FETS) and where said control terminal of each is a gate, where M_1 and M_2 are connected in a common source configuration, where a drain of M_{B1} is coupled to said gate of M_1 through a first resistance and to said gate of M_2 through a second resistance, and where a drain of M_{B2} is coupled to said gate of M_1 through said first resistance and to said gate of M_2 through said second resistance, where said drain of each of M_{B1} and M_{B2} is coupled to a source of bias current I_B, and where said gate of M_{B1} and said gate of M_{B2} are each capacitively coupled to said differential RF input signal.

18. (Amended) A method as in claim 15, where M_1, M_2, M_{B1} and M_{B2} are bipolar transistors Q_1, Q_2, Q_{B1} and Q_{B2} and where said control terminal of each is a base, where Q_1 and Q_2 are connected in a common emitter configuration, where a collector of each of Q_{B1} and Q_{B2} is coupled to a source of bias current I_B and to a base of a further bias transistor Q_{Bb} having an emitter coupled to said base of Q1 through a first resistance and to said base of Q_2 through a second resistance, where said base of Q_{B1} is coupled to said first resistance and to said base of Q_1, and where said base of Q_{B2} is coupled to said second resistance and to said base of Q_2, and where said bases of Q_1, Q_2, Q_{B1} and Q_{B2} are each capacitively coupled to said differential RF input signal.

19. (Original) A method as in claim 18, further comprising coupling a collector of Q_{Bb} to a supply voltage V_{DD}.

20. (Original) A method as in claim 18, where emitters of Q_1, Q_2, Q_{B1} and Q_{B2} are each degenerated using a degeneration impedance.

21. (Original) A method as in claim 20, where a value of the degeneration impedance of each of Q_{B1} and Q_{B2} is about twice the value of a degeneration impedance that would be used if only a single degenerated bias transistor Q_B were used in place of Q_{B1} and Q_{B2}.

22. (Original) A method as in claim 15, further comprising using said transconductance circuit as a part of a mixer of a cellular telephone.

23. (Original) A method as in claim 15, further comprising using said transconductance circuit as a part of a radio frequency integrated circuit.

24. (Original) A method as in claim 15, further comprising using said transconductance circuit as a part of a radio frequency integrated circuit of a direct conversion receiver of a cellular telephone.

25. (Amended) A method as in claim 15, further comprising using said transconductance circuit as a part of a radio frequency integrated circuit as part of a down-conversion mixer of a direct conversion receiver of a cellular telephone~~, and where said radio frequency input signal is a differential signal~~.

26. (Original) A method as in claim 19, where said supply voltage V_{DD} has a value of about one volt.

27. (Original) A method as in claim 19, where said supply voltage V_{DD} has a value of about 1.2 volts.

28. (Amended) A mobile radio frequency communications unit comprising at least one radio frequency integrated circuit that contains at least one transconductance circuit that comprises a first input device M_1, a second input device M_2 and a bias setting device M_B

each having a control terminal coupled to ~~an~~ a differential input radio frequency signal, where an output of M_B is coupled to said control terminal of each of said M_1 and M_2, where M_B is fabricated as two substantially equal sized paralleled bias setting devices M_{B1} and M_{B2}, where M_{B1} and M_{B2} are coupled to said control terminals of M_1 and M_2 for establishing a bias voltage at the control terminals of M_1 and M2 and operate so as to substantially cancel second-order intermodulation distortion and enhance a second order intercept point of said transconductance circuit.

29. (Original) A mobile radio frequency communications unit as in claim 28, where M_1, M_2, M_{B1} and M_{B2} are each one of a MOS device or a bipolar device.

30. (Original) A mobile radio frequency communications unit as in claim 28, where M_1, M_2, M_{B1} and M_{B2} are each degenerated.

31. (Original) A mobile radio frequency communications unit as in claim 28, where a value of a degeneration impedance of each of M_{B1} and M_{B2} is about twice the value of a degeneration impedance that would be used if only the single degenerated bias device M_B were used in place of M_{B1} and M_{B2}.

32. (Amended) A mobile radio frequency communications unit as in claim 28, where said ~~radio frequency signal is a~~ differential input radio frequency signal is comprised of v_{RF+} and v_{RF-}, and where said control terminal of each of M_1 and M_{B1} is capacitively coupled to v_{RF+}, and where said control terminal of each of M_2 and M_{B2} is capacitively coupled to v_{RF-}.

33. (Original) A mobile radio frequency communications unit as in claim 28, where at least said transconductance circuit operates with a supply voltage V_{DD} that has a value of about 1.2 volts or less.